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EXAMINER	
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2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/670,698	BOSSEN, FRANK JAN	
	Examiner	**Art Unit**	
	DANIEL ZEILBERGER	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-16,18-28,30-34,37-39,41-43 and 45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-16,18-28,30-34,37-39,41-43 and 45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/02/08*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 2nd 2009 has been entered.

Response to Arguments

2. Applicant's arguments filed 02/02/2009 have been fully considered but they are not persuasive.

Applicant argues that Wiegand fails to provide for "providing a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes", "computing an index for each coefficient, the index is a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block" and "indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block" because, the Applicant contends, "Table 14-1 shows three discrete and independent vectors which are mode dependent and chosen according to the mode" wherein "a set of [k][i][j] is an index common to all of the four indexing operations...in Wiegand, the index is made

based on the quantum parameter and the positions of coefficients. Now that the index is ready, the next operation is indexing one of the three vectors, using the index...performing 'indexing', or an indexing operation, requires identification of the mode, i.e. the size of the block to be scaled… thus in Wiegand, the indexing operation is mode dependent, but the index itself is independent of the mode" (at pages 16-17 of the Applicant's reply). The Examiner respectfully disagrees.

As to "providing a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes", the Applicant appears to be taking the position that because the Table 14-1 of Wiegand can be broken down into more than one group, the Table 14-1 cannot be taken a single larger group. The Examiner respectfully disagrees with this position. A group, such as that made up of 14-1 comprising the ABT dequantization mantissa values, can indeed be considered a single group of scaling factors applicable for scaling of coefficients of different block sizes, since it quite clear that Table 14-1 makes up the group (i.e. the singular group) of ABT dequantization mantissa values. Indeed using the logic that the Applicant suggests, even the Applicant look-up table could be considered as comprising more than one group; each individual value could be considered a "group". However, since the Applicant's look-up table as a whole can also be considered a group, one would also be able to call it a "single look-up table". Aside from the Applicant's allegation that one should consider the Table 14-1 as three separate groups, there is provided no reasoning as to why Table 14-1 could not be considered as a single group.

As to "computing an index for each coefficient, the index is a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block", the Examiner believes that it is quite clear that if one considers Table 14-1 as a single group, rather than three separate groups, that the index that is used to determine the scaling value is a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block. In equation 14-3 in Wiegand, the reconstructed values are multiplied with the scaling value R, wherein R is accessed using the index (QP%6, i, j) (i.e. R is accessed using the quantization parameter and the position of said each coefficient within the block). However, R is not the look-up table, and the index for R is not the index for the look-up table. The look-up table, table 14-1, is accessed using an index that is a function of the mode (whether the size of the block of coefficients is 8x8, 8x4, 4x8 or 4x4, identified as S_{8x8}, $S_{8x4,4x8}$ and S_{4x4} in table 14-1), the quantization parameter modulo 6 (identified as k in table 14-1), and the position of each coefficient within the block (wherein the position determines which column is chosen, i.e. see Mode 8x4, wherein 0 is chosen for even j and 1 is chosen for odd j).

As to "indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block", the Examiner believes that it is quite clear that if one considers Table 14-1 as a single group, rather than three separate groups, the argument falls apart. Since the size of the block of coefficients is used as an index to determine a value in Table 14-1, wherein the same Table 14-1 is accessed regardless

of the size of the block of coefficients, it is clear that indexing is independent of a size of the block (keeping in mind the Examiner rejection under 35 USC 112 2nd paragraph below).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. *Claims 1, 13, 25, 30, 31, 37, 41 and 45* rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **claim 1**, the claim contains the limitations of "**computing an index for each coefficient, the index being a function of** a quantization parameter, **a size of the block of coefficients**, and a position of said each coefficient within the block; **indexing the LUT**, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, **wherein indexing is independent of a size of the block**". However, it is not clear how an index can be computed based on "a size of the block of coefficients" and then a LUT is indexed, using that very same index, "wherein indexing is independent of a size of the block". It would appear that if an index that is a function of block size is used in indexing a LUT, indexing would necessarily be dependent upon block size. In addition, the Examiner cannot find anywhere in the originally filed specification that clarifies the apparent discrepancy. **Appropriate correction required**, however for the purposes of examination, the claim limitation of

"indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, **wherein indexing is independent of a size of the block**" will be interpreted as --indexing the LUT, **regardless of the size of the block**, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient--. Independent **claims 13, 25, 30, 31, 37, 41 and 45** contain essentially the same limitations as above, and are rejected for the same reasoning as above.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-12 and 31-34 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not

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[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).
[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

qualify as a statutory process. Specifically, each of the individual steps in the process claims could be performed mentally and none of the steps are necessarily tied to another statutory category, and further the claimed process does not transform an underlying subject matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. *Claims 1-4, 6-12, 31-34* are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand ("Joint Committee Draft (CD)")in view of Ohki (US Patent 5,519,503), hereinafter referenced as Wiegand and Ohki, respectively.

Regarding **claim 1**, Wiegand discloses a decoding process (see section 14.3, wherein a scaling and inverse transform for ABT blocks is disclosed), comprising:

providing a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

computing an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each

coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

scaling the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

inversely transform the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section 14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are

inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "receiving a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

receiving a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "receiving a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Regarding **claim 2**, Wiegand further discloses:

wherein the index is the sum of a modulo from the the quantization parameter and a first value determined by block size of the block of coefficients and the position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the quantization parameter (QP) modulo 6, the block size (i.e. 8x8, 8x4, 4x8, or 4x4), and the position of the coefficient (i.e. (i, j)), are required).

Regarding **claim 3**, Wiegand further discloses:

wherein the first value is the sum of a second value determined by the vertical size of the block and the vertical position of said each coefficient within the block and a third value determined by the horizontal size of the block and the horizontal position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the block size (i.e. 8x8, 8x4, 4x8, or 4x4), and the position of the coefficient (i.e. (i, j)), are required, wherein as evidenced by differing modes 4x8 and 8x4, not only does the actual block size affect the indexing but also specifically the vertical size and the horizontal size, and further wherein coordinates i and j refer to the coefficients vertical and horizontal position within the block).

Regarding **claim 4**, Wiegand further discloses:

wherein the block size is one selected from a group that consists of 4x4, 4x8, 8x4 and 8x8 (see section 14.3.2.2, wherein modes 8x8, 8x4, 4x8, and 4x4 are disclosed).

Regarding **claim 6**, Wiegand further discloses:

determining an offset of an array according to the position of said each coefficient; determining an inverse quantization value for said each coefficient based on the offset (see section 14.3.2.2 and equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, and 4x4, wherein according to the coefficient position, a particular column of a particular S table of the table 14-1 is selected, wherein the output of the table 14-1 determines the inverse quantization value for the coefficient).

Regarding **claim 7**, Wiegand further discloses:

wherein entries of the array are of a form pow(2, (k+O)/12), where k represents a position of an individual entry in the array and O is a constant (see table 14-1, wherein all of the values in the table 14-1 can be represented by the form pow(2, x), since any number can be represented by pow(2, x), and thus an appropriate k value will exist for any number such that the number will equal pow(2, (k+O)/12), and further since each column is increasing as the position increases, k will be increasing as the position increases and thus will represent the position of an individual entry, such as for the first column wherein a selection of O=47.3 would result in k values equal to 0, 2, 4, 6, 8, and 10, in order to achieve the exhibited values).

Regarding **claim 8**, Wiegand further discloses:

wherein the array is a 1-dimensional (I-D) (see section 14.3.2.2, table 14-1, wherein in the mode 8x8, S_{8x8} is 1-dimensional).

Regarding **claim 9**, Wiegand further discloses:

wherein inversely transform the block of scaled coefficients comprises: applying a vertical transform to the block of scaled coefficients; and applying a horizontal transform to block of scaled coefficients (see section 14.3.2.2, wherein a horizontal transform is applied in equation 14-4, and a vertical transform is then applied in equation 14-6).

Regarding **claim 10**, Wiegand discloses everything as applied above in regards to claim 1. Wiegand fails to disclose “wherein the basis vectors of the transform are:

$$\begin{matrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 12/8 & 10/8 & 6/8 & 3/8 & -3/8 & -6/8 & -10/8 & -12/8 \\ 1 & 1/2 & -1/2 & -1 & -1 & -1/2 & 1/2 & 1 \\ 10/8 & -3/8 & -12/8 & -6/8 & 6/8 & 12/8 & 3/8 & -10/8 \\ 1 & -1 & -1 & 1 & 1 & -1 & -1 & 1 \\ 6/8 & -12/8 & 3/8 & 10/8 & -10/8 & -3/8 & 12/8 & -6/8 \\ 1/2 & -1 & 1 & -1/2 & -1/2 & 1 & -1 & 1/2 \\ 3/8 & -6/8 & 10/8 & -12/8 & 12/8 & -10/8 & 6/8 & -3/8, \end{matrix}$$

or multiples thereof or a transform thereof, and represent an 8-point transform used for blocks that have one or both of horizontal and vertical size of 8”.

However, the examiner maintains that it would have been obvious, as taught by Ohki, to provide:

wherein the basis vectors of the transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8.

or multiples thereof or a transform thereof, and represent an 8-point transform used for blocks that have one or both of horizontal and vertical size of 8 (see column 7 line 59 through column 8 line 27 and column 9 lines 4-17, wherein an 8x8 near-linear IDCT is disclosed such that, factoring out a multiple of ½, the disclosed inverse transform coefficients are nearly the same as those in the claimed invention. While the examiner concedes that the blocks of coefficients are not identical, the examiner maintains that since both matrices are approximations of an IDCT applied to an 8x8 block of coefficients, one of ordinary skill in the art would recognize that the differences amount to different choices of rounding from the original irrational numbers and are thus merely a design choice. The examiner will reconsider, if applicant amends the claim to include some advantage over the prior art).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein the basis vectors of the transform are:

$$\begin{matrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 12/8 & 10/8 & 6/8 & 3/8 & -3/8 & -6/8 & -10/8 & -12/8 \\ 1 & 1/2 & -1/2 & -1 & -1 & -1/2 & 1/2 & 1 \\ 10/8 & -3/8 & -12/8 & -6/8 & 6/8 & 12/8 & 3/8 & -10/8 \\ 1 & -1 & -1 & 1 & 1 & -1 & -1 & 1 \\ 6/8 & -12/8 & 3/8 & 10/8 & -10/8 & -3/8 & 12/8 & -6/8 \\ 1/2 & -1 & 1 & -1/2 & -1/2 & 1 & -1 & 1/2 \\ 3/8 & -6/8 & 10/8 & -12/8 & 12/8 & -10/8 & 6/8 & -3/8, \end{matrix}$$

or multiples thereof or a transform thereof, and represent an 8-point transform used for blocks that have one or both of horizontal and vertical size of 8", as taught by Ohki, for the purpose of performing an IDCT processing without employing multiplication circuits, resulting in a simpler circuit (see Ohki column 9 lines 4-17).

Regarding **claim 11**, Wiegand discloses everything as applied above in regards to claim 1. Wiegand fails to disclose "wherein inversely transform the block of scaled coefficients comprises computing the inverse transform using only a sequence of addition, subtraction, and shift operations". However, the examiner maintains that it would have been obvious, in view of Ohki, to provide:

wherein inversely transform the block of scaled coefficients comprises computing the inverse transform using only a sequence of addition, subtraction, and shift operations (see column 9 lines 4-17, wherein a transform is disclosed that makes use of only addition and subtraction circuits, without employing multiplication circuits, such that the circuit scale may be simplified).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically

providing "wherein inversely transform the block of scaled coefficients comprises computing the inverse transform using only a sequence of addition, subtraction, and shift operations", as taught by Ohki, for the purpose of simplifying the circuit scale.

Regarding **claim 12**, Wiegand further discloses:

wherein the block size is one selected from a group that consists of 4x4, 4x8, 8x4 and 8x8 (see section 14.3.2.2, wherein modes 8x8, 8x4, 4x8, and 4x4 are disclosed).

Regarding **claim 31**, Wiegand discloses a decoding process (see section 14.3, wherein a scaling and inverse transform for ABT blocks is disclosed), comprising:

providing a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

computing an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

indexing the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

scaling the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

applying a vertical transform and a horizontal transform to the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section 14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(I,j)).

Wiegand fails to specifically disclose "receiving a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized

for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

receiving a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "receiving a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to disclose "wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof, or a transform thereof".

However, the examiner maintains that it would have been obvious, as taught by Ohki, to provide:

wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof, or a transform thereof (see column 7 line 59 through column 8 line 27 and column 9 lines 4-17, wherein an 8x8 near-linear IDCT is disclosed such that, factoring out a multiple of ½, the disclosed inverse transform coefficients are nearly the same as those in the claimed invention. While the examiner concedes that the blocks of coefficients are not identical, the examiner maintains that since both matrices are approximations of an IDCT applied to an 8x8 block of coefficients, one of ordinary skill in the art would recognize that the differences amount to different choices of rounding from the original irrational numbers and are thus merely

a design choice. The examiner will reconsider, if applicant amends the claim to include some advantage over the prior art).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing “wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8.

or multiples thereof

or a transform thereof”, as taught by Ohki, for the purpose of performing an IDCT processing without employing multiplication circuits, resulting in a simpler circuit (see Ohki column 9 lines 4-17).

Regarding **claim 32**, Wiegand further discloses:

wherein the index is a sum of a modulo from the quantization parameter a first value determined by a vertical position of said each coefficient within the block and a second value determined by a horizontal position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the quantization parameter (QP) modulo 6, and the position of the coefficient (i, j), are required, wherein coordinates i and j refer to the coefficients vertical and horizontal position within the block).

Regarding **claim 33**, Wiegand discloses everything as applied above in regards to claim 1. Wiegand fails to disclose “wherein applying the transform comprises computing the transform using only a sequence of addition, subtraction, and shift operations”. However, the examiner maintains that it would have been obvious, in view of Ohki, to provide:

wherein applying the transform comprises computing the transform using only a sequence of addition, subtraction, and shift operations (see column 9 lines 4-17, wherein a transform is disclosed that makes use of only addition and subtraction circuits, without employing multiplication circuits, such that the circuit scale may be simplified).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein applying the transform comprises computing the transform using only a sequence of addition, subtraction, and shift operations”, as taught by Ohki, for the purpose of simplifying the circuit scale.

Regarding **claim 34**, Wiegand further discloses:

wherein the block size is one selected from a group that consists of 4x4, 4x8, 8x4 and 8x8 (see section 14.3.2.2, wherein modes 8x8, 8x4, 4x8, and 4x4 are disclosed).

8. *Claims 13-16, 18-24 and 37-39* are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand, in view of Ohki, and further in view of McMillan, Jr. et al. (US Patent 5,224,062), hereinafter referenced as McMillan.

Regarding **claim 13**, Wiegand discloses a computer-implemented decoder for decoding a block of coefficients (see section 14.3, wherein a scaling and inverse transform for ABT blocks is disclosed) comprising:

a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

an index calculator configured to compute an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

an indexer configured to index the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to

determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

a scaler configured to scale the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

an inverse transformer configured to inversely transform the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section 14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "a computer-implemented decoder for decoding a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

a computer-implemented decoder for decoding a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized

for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing “a computer-implemented decoder for decoding a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information”, as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to specifically disclose “a memory which stores” the single look-up table. However, the Examiner maintains that it would have been obvious, in view of McMillan, to provide:

“a memory which stores” the single look-up table (see column 6 line 62 through column 7 line 6, wherein it is disclosed that a memory 20 is used to store a plurality of look-up tables for the CPU 18 to perform dequantization of the input values and scalings of their reconstruction kernels, when performing inverse discrete cosine transformation).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing “a memory which stores” the single look-up table, as taught by McMillan, for the purpose of allowing the look-up table to actual be used in a hardware computer environment such that the look-up table can be accessed by a CPU.

Regarding **claim 14**, Wiegand further discloses:

wherein the index is the sum of a module from the quantization parameter and a first value determined by block size of the block of coefficients and the position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the quantization parameter (QP) modulo 6, the block size (i.e. 8x8, 8x4, 4x8, or 4x4), and the position of the coefficient (i.e. (i, j)), are required).

Regarding **claim 15**, Wiegand further discloses:

wherein the first value is the sum of a second value determined by the vertical size of the block and the vertical position of said each coefficient within the block and a third value determined by the horizontal size of the block and the horizontal position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the block size (i.e. 8x8, 8x4, 4x8, or 4x4), and the position of the coefficient (i.e. (i, j)), are required, wherein as evidenced by differing modes 4x8 and 8x4, not only does

the actual block size affect the indexing but also specifically the vertical size and the horizontal size, and further wherein coordinates i and j refer to the coefficients vertical and horizontal position within the block).

Regarding **claim 16**, Wiegand further discloses:

wherein the block size is one selected from a group that consists of 4x4, 4x8, 8x4 and 8x8 (see section 14.3.2.2, wherein modes 8x8, 8x4, 4x8, and 4x4 are disclosed).

Regarding **claim 18**, Wiegand further discloses:

wherein the scaler scales the block of received coefficients using a scaling factor by determining an offset of an array according to the position of said each coefficient; determining an inverse quantization value for said each coefficient based on the offset (see section 14.3.2.2 and equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, and 4x4, wherein according to the coefficient position, a particular column of a particular S table of the table 14-1 is selected, wherein the output of the table 14-1 determines the inverse quantization value for the coefficient).

Regarding **claim 19**, Wiegand further discloses:

wherein entries of the array are of a form pow(2, (k+O)/12), where k represents a position of an individual entry in the array and O is a constant (see table 14-1, wherein all of the values in the table 14-1 can be represented by the form pow(2, x), since any number can be represented by pow(2, x), and thus an appropriate k value will exist for

any number such that the number will equal pow(2, (k+O)/12), and further since each column is increasing as the position increases, k will be increasing as the position increases and thus will represent the position of an individual entry, such as for the first column wherein a selection of O=47.3 would result in k values equal to 0, 2, 4, 6, 8, and 10, in order to achieve the exhibited values).

Regarding **claim 20**, Wiegand further discloses:

wherein the array is a 1-dimensional (I-D) (see section 14.3.2.2, table 14-1, wherein in the mode 8x8, S_{8x8} is 1-dimensional).

Regarding **claim 21**, Wiegand further discloses:

wherein the inverse transformer inversely transforms the block of scaled coefficients by applying a vertical transform to the block of scaled coefficients; and applying a horizontal transform to block of scaled coefficients (see section 14.3.2.2, wherein a horizontal transform is applied in equation 14-4, and a vertical transform is then applied in equation 14-6).

Regarding **claim 22**, Wiegand discloses everything as applied above in regards to claim 13. Wiegand fails to disclose "wherein the basis vectors of the transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof or a transform thereof, and represent an 8-point transform used for blocks that have one or both of horizontal and vertical size of 8".

However, the examiner maintains that it would have been obvious, as taught by Ohki, to provide:

wherein the basis vectors of the transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof or a transform thereof, and represent an 8-point transform used for blocks that have one or both of horizontal and vertical size of 8 (see column 7 line 59 through column 8 line 27 and column 9 lines 4-17, wherein an 8x8 near-linear IDCT is disclosed such that, factoring out a multiple of ½, the disclosed inverse transform coefficients are nearly the same as those in the claimed invention. While the examiner concedes that the blocks of coefficients are not identical, the examiner maintains that since both matrices are approximations of an IDCT applied to an 8x8 block of coefficients, one of ordinary skill in the art would

recognize that the differences amount to different choices of rounding from the original irrational numbers and are thus merely a design choice. The examiner will reconsider, if applicant amends the claim to include some advantage over the prior art).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein the basis vectors of the transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8.

or multiples thereof or a transform thereof, and represent an 8-point transform used for blocks that have one or both of horizontal and vertical size of 8", as taught by Ohki, for the purpose of performing an IDCT processing without employing multiplication circuits, resulting in a simpler circuit (see Ohki column 9 lines 4-17).

Regarding **claim 23**, Wiegand discloses everything as applied above in regards to claim 13. Wiegand fails to disclose "wherein the inverse transformer computes the inverse transform using only a sequence of addition, subtraction, and shift operations". However, the examiner maintains that it would have been obvious, in view of Ohki, to provide:

wherein the inverse transformer computes the inverse transform using only a sequence of addition, subtraction, and shift operations (see column 9 lines 4-17, wherein a transform is disclosed that makes use of only addition and subtraction circuits, without employing multiplication circuits, such that the circuit scale may be simplified).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing “wherein the inverse transformer computes the inverse transform using only a sequence of addition, subtraction, and shift operations”, as taught by Ohki, for the purpose of simplifying the circuit scale.

Regarding **claim 24**, Wiegand further discloses:

wherein the block size is one selected from a group that consists of 4x4, 4x8, 8x4 and 8x8 (see section 14.3.2.2, wherein modes 8x8, 8x4, 4x8, and 4x4 are disclosed).

Regarding **claim 37**, Wiegand discloses a computer-implemented decoder (see section 14.3, wherein a scaling and inverse transform for ABT blocks is disclosed) comprising:

a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

an index calculator configured to compute an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

an indexer configured to index the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

a scaler configured to scale the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

an inverse transformer to apply a vertical transform and a horizontal transform to the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section 14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "a computer-implemented decoder for decoding a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

a computer-implemented decoder for decoding a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "a computer-implemented decoder for decoding a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally

transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to disclose "wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof. or a transform thereof".

However, the examiner maintains that it would have been obvious, as taught by Ohki, to provide:

wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof. or a transform thereof (see column 7 line 59 through column 8 line 27 and column 9 lines 4-17, wherein an 8x8 near-linear IDCT is disclosed such that, factoring out a multiple of ½, the disclosed inverse transform

coefficients are nearly the same as those in the claimed invention. While the examiner concedes that the blocks of coefficients are not identical, the examiner maintains that since both matrices are approximations of an IDCT applied to an 8x8 block of coefficients, one of ordinary skill in the art would recognize that the differences amount to different choices of rounding from the original irrational numbers and are thus merely a design choice. The examiner will reconsider, if applicant amends the claim to include some advantage over the prior art).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof

or a transform thereof", as taught by Ohki, for the purpose of performing an IDCT processing without employing multiplication circuits, resulting in a simpler circuit (see Ohki column 9 lines 4-17).

Wiegand also fails to specifically disclose "a memory which stores" the single look-up table. However, the Examiner maintains that it would have been obvious, in view of McMillan, to provide:

"a memory which stores" the single look-up table (see column 6 line 62 through column 7 line 6, wherein it is disclosed that a memory 20 is used to store a plurality of

look-up tables for the CPU 18 to perform dequantization of the input values and scalings of their reconstruction kernels, when performing inverse discrete cosine transformation).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "a memory which stores" the single look-up table, as taught by McMillan, for the purpose of allowing the look-up table to actual be used in a hardware computer environment such that the look-up table can be accessed by a CPU.

Regarding **claim 38**, Wiegand further discloses:

wherein the index is a sum of a module from the quantization parameter a first value determined by a vertical position of said each coefficient within the block and a second value determined by a horizontal position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the quantization parameter (QP) modulo 6, and the position of the coefficient (i, j), are required, wherein coordinates i and j refer to the coefficients vertical and horizontal position within the block).

Regarding **claim 39**, Wiegand discloses everything as applied above in regards to claim 1. Wiegand fails to disclose "wherein applying the transform comprises computing the transform using only a sequence of addition, subtraction, and shift

operations”. However, the examiner maintains that it would have been obvious, in view of Ohki, to provide:

wherein applying the transform comprises computing the transform using only a sequence of addition, subtraction, and shift operations (see column 9 lines 4-17, wherein a transform is disclosed that makes use of only addition and subtraction circuits, without employing multiplication circuits, such that the circuit scale may be simplified).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein applying the transform comprises computing the transform using only a sequence of addition, subtraction, and shift operations”, as taught by Ohki, for the purpose of simplifying the circuit scale.

9. *Claims 25-28 and 41-43* are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand in view of Ohki, and further in view of Boon et al. (US Patent 6,574,368), hereinafter referenced as Boon.

Regarding **claim 25**, Wiegand discloses to:

provide a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

compute an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

index the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

scale the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

inversely transform the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section

14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "receive a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

receive a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "receive a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to expressly disclose implementing the above steps with a computer-readable medium storing instructions which, when executed by a system, cause the system to perform the steps. However, the examiner maintains that it would have been obvious, in view of Boon, to provide:

a computer-readable medium storing instructions which, when executed by a system, cause the system to perform the steps (see Boon column 29 lines 48-54).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing “a computer-readable medium storing instructions which, when executed by a system, cause the system to perform the steps” perform the above recited steps, as taught by Boon, for the purpose of ensuring a high computational speed, the capability of program algorithm modification without changing hardware, and to provide the ability for the decoding algorithm to be disseminated and used by the millions of people who have access to computers.

Regarding **claim 26**, Wiegand further discloses:

wherein the index is the sum of a modulo from the quantization parameter and a first value determined by block size of the block of coefficients and the position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the quantization parameter (QP) modulo 6, the block size (i.e. 8x8, 8x4, 4x8, or 4x4), and the position of the coefficient (i.e. (i, j)), are required).

Regarding **claim 27**, Wiegand further discloses:

wherein the first value is the sum of a second value determined by the vertical size of the block and the vertical position of said each coefficient within the block and a third value determined by the horizontal size of the block and the horizontal position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the block size (i.e. 8x8, 8x4, 4x8, or 4x4), and the position of the coefficient (i.e. (i, j)), are required, wherein as evidenced by differing modes 4x8 and 8x4, not only does the actual block size affect the indexing but also specifically the vertical size and the horizontal size, and further wherein coordinates i and j refer to the coefficients vertical and horizontal position within the block).

Regarding **claim 28**, Wiegand further discloses:

wherein the block size is one selected from a group that consists of 4x4, 4x8, 8x4 and 8x8 (see section 14.3.2.2, wherein modes 8x8, 8x4, 4x8, and 4x4 are disclosed).

Regarding **claim 41**, Wiegand discloses to:

provide a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

compute an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

index the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

scale the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

apply a vertical transform and a horizontal transform to the block of scaled coefficients, in order to reconstruct a signal of the block of video information for display

of the video signal (see section 14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "receive a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

receive a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "receive a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to disclose "wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8.

or multiples thereof, or a transform thereof".

However, the examiner maintains that it would have been obvious, as taught by Ohki, to provide:

wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8.

or multiples thereof. or a transform thereof (see column 7 line 59 through column 8 line 27 and column 9 lines 4-17, wherein an 8x8 near-linear IDCT is disclosed such that, factoring out a multiple of ½, the disclosed inverse transform coefficients are nearly the same as those in the claimed invention. While the examiner concedes that the blocks of coefficients are not identical, the examiner maintains that since both matrices are approximations of an IDCT applied to an 8x8 block of coefficients, one of ordinary skill in the art would recognize that the differences amount

to different choices of rounding from the original irrational numbers and are thus merely a design choice. The examiner will reconsider, if applicant amends the claim to include some advantage over the prior art).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein the basis vectors of the vertical and horizontal transform are:

$$\begin{matrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 12/8 & 10/8 & 6/8 & 3/8 & -3/8 & -6/8 & -10/8 & -12/8 \\ 1 & 1/2 & -1/2 & -1 & -1 & -1/2 & 1/2 & 1 \\ 10/8 & -3/8 & -12/8 & -6/8 & 6/8 & 12/8 & 3/8 & -10/8 \\ 1 & -1 & -1 & 1 & 1 & -1 & -1 & 1 \\ 6/8 & -12/8 & 3/8 & 10/8 & -10/8 & -3/8 & 12/8 & -6/8 \\ 1/2 & -1 & 1 & -1/2 & -1/2 & 1 & -1 & 1/2 \\ 3/8 & -6/8 & 10/8 & -12/8 & 12/8 & -10/8 & 6/8 & -3/8, \end{matrix}$$

or multiples thereof. or a transform thereof", as taught by Ohki, for the purpose of performing an IDCT processing without employing multiplication circuits, resulting in a simpler circuit (see Ohki column 9 lines 4-17).

Wiegand also fails to expressly disclose implementing the above steps with a computer-readable medium storing instructions which, when executed by a system, cause the system to perform the steps. However, the examiner maintains that it would have been obvious, in view of Boon, to provide:

a computer-readable medium storing instructions which, when executed by a system, cause the system to perform the steps (see Boon column 29 lines 48-54).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "a computer-readable medium storing instructions which, when executed by a

system, cause the system to perform the steps" perform the above recited steps, as taught by Boon, for the purpose of ensuring a high computational speed, the capability of program algorithm modification without changing hardware, and to provide the ability for the decoding algorithm to be disseminated and used by the millions of people who have access to computers.

Regarding **claim 42**, Wiegand further discloses:

wherein the index is a sum of the quantization parameter a first value determined by a vertical position of said each coefficient within the block and a second value determined by a horizontal position of said each coefficient within the block (see equation 14-3 and table 14-1 and modes 8x8, 8x4, 4x8, 4x4, wherein in order to index the lookup table 14-1, the combination (i.e. the sum) of the quantization parameter (QP), and the position of the coefficient (i, j), are required, wherein coordinates i and j refer to the coefficients vertical and horizontal position within the block).

Regarding **claim 43**, Wiegand discloses everything as applied above in regards to claim 1. Wiegand fails to disclose "wherein instructions to cause the system to apply the transform comprise instructions which, when executed by the system, cause the system to computer the transform using only a sequence of addition, subtraction, and shift operations". However, the examiner maintains that it would have been obvious, in view of Ohki, to provide:

wherein instructions to cause the system to apply the transform comprise instructions which, when executed by the system, cause the system to computer the transform using only a sequence of addition, subtraction, and shift operations (see column 9 lines 4-17, wherein a transform is disclosed that makes use of only addition and subtraction circuits, without employing multiplication circuits, such that the circuit scale may be simplified).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein instructions to cause the system to apply the transform comprise instructions which, when executed by the system, cause the system to computer the transform using only a sequence of addition, subtraction, and shift operations", as taught by Ohki, for the purpose of simplifying the circuit scale.

10. *Claims 30 and 45* are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiegand in view of Ohki, and further in view of Boon, and further in view of McMillan.

Regarding **claim 30**, Wiegand discloses to:

provide a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

compute an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

index the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

scale the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

inversely transform the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section

14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to expressly disclose implementing the above steps using a decoding apparatus comprising the "means for" performing the various steps of the claim. However, the examiner maintains that it would have been obvious, in view of Boon, to provide:

a decoding apparatus comprising the "means for" performing the various steps of the claim (see Boon column 29 lines 48-54).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing a decoding apparatus comprising the "means for" performing the various steps of the claim, as taught by Boon, for the purpose of ensuring a high computational speed, the capability of program algorithm modification without changing hardware, and to provide the ability for the decoding algorithm to be disseminated and used by the millions of people who have access to computers.

Wiegand also fails to specifically disclose "storing" the single look-up table. However, the Examiner maintains that it would have been obvious, in view of McMillan, to provide:

"storing" the single look-up table (see column 6 line 62 through column 7 line 6, wherein it is disclosed that a memory 20 is used to store a plurality of look-up tables for the CPU 18 to perform dequantization of the input values and scalings of their reconstruction kernels, when performing inverse discrete cosine transformation).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically

providing "storing" the single look-up table, as taught by McMillan, for the purpose of allowing the look-up table to actual be used in a hardware computer environment such that the look-up table can be accessed by a CPU.

Regarding **claim 45**, Wiegand discloses to:

provide a single look-up table (LUT) which consists of a single group of scaling factors applicable for scaling of coefficients of different block sizes (see section 14.3.2.2, wherein it is disclosed that the group of ABT dequantization mantissa values used in Table 14-1 are applicable for block sizes 4x4, 4x8, 8x4 and 8x8);

compute an index for each coefficient, the index being a function of a quantization parameter, a size of the block of coefficients, and a position of said each coefficient within the block (see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to address the look-up table 14-1, as shown in table 14-1 and modes 4x4, 4x8, 8x4 and 8x8, and thus QP, block size, and coefficient position i,j are elements of an index used to access a value in Table 14-1);

index the LUT, using the computed index, to determine a scaling factor in the LUT applicable for scaling of said each coefficient, wherein indexing is independent of a size of the block (see 35 USC 112 2nd paragraph rejection above, and further see section 14.3.2.2, wherein for each scaling operation, in order to determine R(QP%6, i, j), it is necessary to use the values of QP, block size, and coefficient position i, j to

address the look-up table 14-1, wherein table 14-1 is used regardless of whether the block size is 4x4, 4x8, 8x4 or 8x8);

scale the block of received coefficients, using the determined scaling factors, to inversely quantize the block of received coefficients (see section 14.3.2.2, wherein equation 14-3 is used to scale an MxN block of coefficients, wherein a coefficient YQ(i,j) is scaled by R(QP%6, i, j), such that for each scaling operation, in order to determine R(QP%6, i, j), index parameters i, j, QP, and block size are required to address the look-up table 14-1, as shown in table 14-1 and modes 8x8, 8x4, 4x8, 4x4); and

apply a vertical transform and a horizontal transform to the block of scaled coefficients in order to reconstruct a signal of the block of video information for display of the video signal (see section 14.3.2, wherein as shown in section 14.3.2.2 the matrix of scaled coefficients YD(i,j) are inverse transformed first horizontally and then vertically to obtain a final decoded result S'(i,j)).

Wiegand fails to specifically disclose "a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information". However, the Examiner maintains that it would have been obvious, in view of Ohki, to provide:

a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information (see figure 8 and column 11 lines 34-67, wherein before dequantization and inverse transformation, transformation and quantization occurs, wherein the dequantization and inverse transformation occurs in order to display the contents of the data).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "a block of coefficients relating to a block of video information to be displayed which has been transformed and quantized for compression of the video information", as taught by Ohki, for the purpose of implementing the method of Wiegand with actual data that had been originally transformed and quantized, since for Wiegand to dequantize and inverse transform data, for the result to be meaningful the data must have been originally transformed and quantized, wherein the dequantization and inverse transformation provide the desired ability to display the picture data.

Wiegand also fails to disclose "wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof.

or a transform thereof".

However, the examiner maintains that it would have been obvious, as taught by Ohki, to provide:

wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof, or a transform thereof (see column 7 line 59 through column 8 line 27 and column 9 lines 4-17, wherein an 8x8 near-linear IDCT is disclosed such that, factoring out a multiple of ½, the disclosed inverse transform coefficients are nearly the same as those in the claimed invention. While the examiner concedes that the blocks of coefficients are not identical, the examiner maintains that since both matrices are approximations of an IDCT applied to an 8x8 block of coefficients, one of ordinary skill in the art would recognize that the differences amount to different choices of rounding from the original irrational numbers and are thus merely a design choice. The examiner will reconsider, if applicant amends the claim to include some advantage over the prior art).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing "wherein the basis vectors of the vertical and horizontal transform are:

1	1	1	1	1	1	1	1
12/8	10/8	6/8	3/8	-3/8	-6/8	-10/8	-12/8
1	1/2	-1/2	-1	-1	-1/2	1/2	1
10/8	-3/8	-12/8	-6/8	6/8	12/8	3/8	-10/8
1	-1	-1	1	1	-1	-1	1
6/8	-12/8	3/8	10/8	-10/8	-3/8	12/8	-6/8
1/2	-1	1	-1/2	-1/2	1	-1	1/2
3/8	-6/8	10/8	-12/8	12/8	-10/8	6/8	-3/8,

or multiples thereof, or a transform thereof", as taught by Ohki, for the purpose of performing an IDCT processing without employing multiplication circuits, resulting in a simpler circuit (see Ohki column 9 lines 4-17).

Wiegand also fails to expressly disclose implementing the above steps using a decoding apparatus comprising the "means for" performing the various steps of the claim. However, the examiner maintains that it would have been obvious, in view of Boon, to provide:

a decoding apparatus comprising the "means for" performing the various steps of the claim (see Boon column 29 lines 48-54).

Therefore, the examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing a decoding apparatus comprising the "means for" performing the various steps of the claim, as taught by Boon, for the purpose of ensuring a high computational speed, the capability of program algorithm modification without changing hardware, and to provide the ability for the decoding algorithm to be disseminated and used by the millions of people who have access to computers.

Wiegand also fails to specifically disclose “storing” the single look-up table. However, the Examiner maintains that it would have been obvious, in view of McMillan, to provide:

“storing” the single look-up table (see column 6 line 62 through column 7 line 6, wherein it is disclosed that a memory 20 is used to store a plurality of look-up tables for the CPU 18 to perform dequantization of the input values and scalings of their reconstruction kernels, when performing inverse discrete cosine transformation).

Therefore, the Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wiegand, by specifically providing “storing” the single look-up table, as taught by McMillan, for the purpose of allowing the look-up table to actual be used in a hardware computer environment such that the look-up table can be accessed by a CPU.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL ZEILBERGER whose telephone number is (571)270-3570. The examiner can normally be reached on M-F 8:30-6pm est (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Vikkram Bali can be reached on (571)272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel Zeilberger
Examiner
Art Unit 2624

DZ
04/02/2009

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624